

GUARANTEED ENERGY SAVINGS PROGRAM

A Partnership between



&



centrecountypa.gov/energysavings

Pennsylvania Act 39-2010 (Act 163 –2016)

- Legislation that encourages governmental units to leverage wasted utility dollars to fund building improvements through energy saving opportunities
- Project savings fully or partially offset all project costs

PA Act 39-2010 (Act 163 –2016) – cont.

- Legislation Allows County to:
 - work with one contractor who becomes the single point of accountability (contractor control)
 - take best bid, giving the County full input and control of scope, design, etc.
- Legislation Reduces Risks by:
 - guaranteeing the cost (no change orders costs to County)
 - guaranteeing the savings (contract is backed by a 20 year guarantee – the system must perform as projected or contractor is responsible for the difference)

Timeline

- April 2017 – Bid Opening of RFPs for Energy Audit
- July 2017 – Contract for Energy Audit Approved with
McClure Company
- October 2017 – Energy Audit Results Presented with
Energy Conservation Measures
- December 2017 – Presentation #2
- February 2, 2018 – Presentation from Public Financial
Management on Financing of Program
- February 8, 2018 – Informational Meeting
- February 27, 2018 – Presentation #3

McClure Company

- Worked with the following counties for Energy Programs:
 - Northampton (\$19,000,000)
 - York (\$9,500,000)
 - Lackawanna (\$7,400,000)
 - Beaver (\$2,000,000)
 - Schuylkill (\$1,800,000)
 - Bedford (\$1,700,000)
 - Adams (\$1,100,000)
- Bald Eagle Area School District:
 - 2002-2014 (\$2,300,000)

GUARANTEED ENERGY SAVINGS PROGRAM

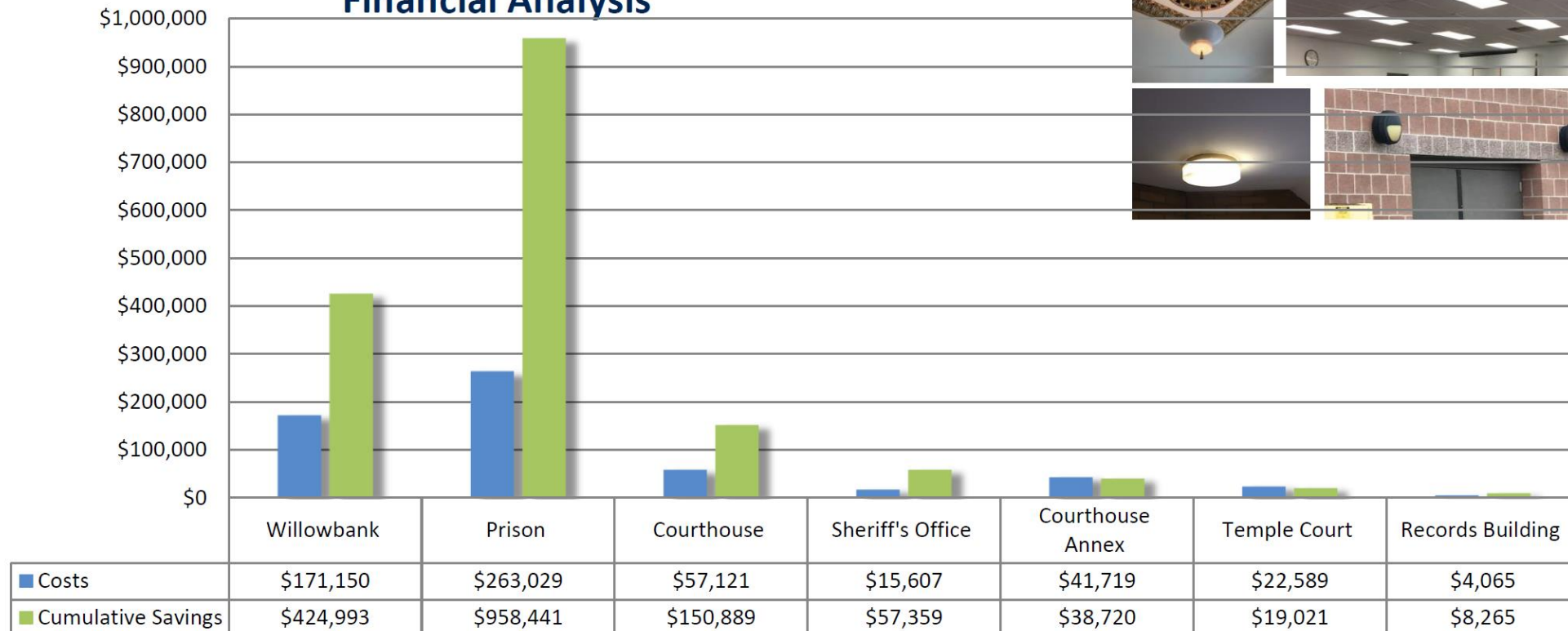
		Cost	Savings
1	LED Lighting Upgrades	\$510,900	\$1,599,948
2	County Wide Building Envelope	\$68,319	\$167,403
3	County Courthouse HVAC & Controls (4-Pipe)	\$2,233,090	\$132,993
4	Prison Fluid Cooler	\$220,585	\$0
5	Prison DWH & Kitchen RTU Replacement	\$417,456	\$3,109
6	WB MUA Unit & Fluid Cooler Upgrades	\$376,845	\$142,152
7	WB Boiler Plant and Controls Upgrade	\$468,801	\$39,768
8	Sheriff's Office Heating & Controls Upgrade	\$237,368	\$53,268
9	Sheriff's Office Roof (TPO) Replacement	\$184,946	\$2,312
10	Sheriff's Office Window Replacement	\$98,460	\$9,878
11	Sheriff's Office Interior Repairs	\$68,979	\$0
12b	Solar Project	\$539,599	\$3.1M - \$3.5M

LED Lighting Upgrade

1. Convert a mix of higher wattage lamps to LED.
2. Add lighting controls to common areas that create additional energy savings.
3. Anticipated rebates over \$40,000.



Financial Analysis



Building Envelope

1. New door weather stripping and commercial insulation and sealants to eliminate energy losses due to air infiltration from air leaks, gaps in thermal bridging and moisture.

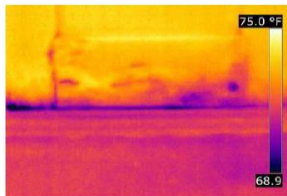
Courthouse

- Penetrations sealed
- Wall cracks, window/door frames, vents sealed
- Weather-stripping
- Door sweeps
- Astragals



Courthouse Annex

- Wall cracks, window/door frames and vents sealed
- Weather-stripping
- Door sweeps
- Astragals (weather-strip for center of double door)



Prison

- Penetrations sealed
- Wall cracks, window/door frames and vents sealed
- Weather-stripping (includes OH Door)
- Door sweeps (includes OH Door)



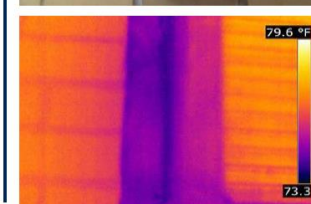
Records Storage

- Penetrations sealed
- Weather-stripping
- Door sweeps



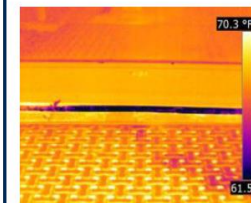
Sheriff's Office

- Penetrations sealed
- Wall cracks, window/door frames and vents sealed
- Weather-stripping
- Door sweeps



Willowbank Building

- Penetrations sealed
- Wall cracks, window/door frames and vents sealed
- Weather-stripping
- Door sweeps
- Astragals



Courthouse HVAC & Control Upgrades

1. Existing heating and cooling consists of a diverse mix of HVAC systems.
2. Design considerations include:
 - ✓ A complete HVAC System Renovation.
 - ✓ Code compliant with ventilation and uniform, if feasible.
 - ✓ Incorporate a unified modern control system.
 - ✓ Incorporate existing ductwork to accommodate outside air requirements.
 - ✓ Improve zoning with independent heating and cooling available in each zone.
 - ✓ Utilize natural gas for the primary heating.
 - ✓ Not in conflict with the historic portion of the building.
 - ✓ Space Planning with WMF



Courthouse – Historic Portion HVAC & Control Upgrades

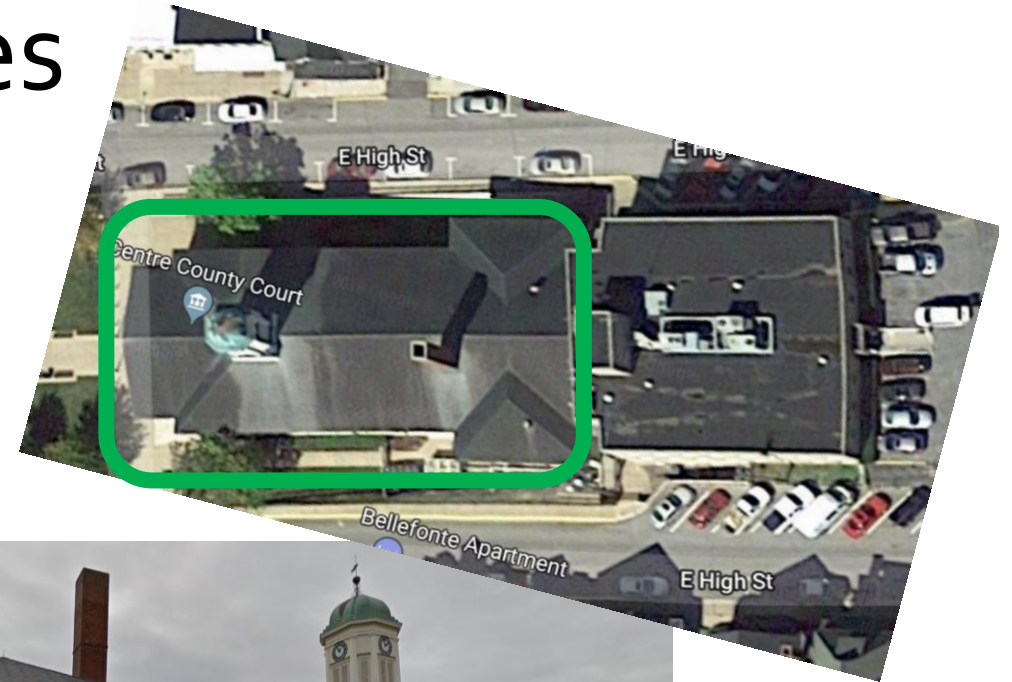
Four Pipe Fan Coil with VAV RTU's

Historic Portion of Courthouse (basement, 1st floor, 2nd floor including main courtroom)

1. Remove cast iron steam boilers and all associated equipment.
2. Remove steam to hot water heat exchanger, split-system air-cooled chiller, 4-pipe blower coil unit, steam unit heaters, 4-pipe fan coil units, 7-1/2-ton cooling only split-system unit, 4-ton split-system
3. Where applicable, associated pumps, piping and associated controls will be removed and replaced.
4. Gas piping shall be rerouted to new boilers.

New Work

1. Install new 4-pipe heating and cooling system with all new Direct Digital Controls to include:
2. Gas fired, hot water high efficiency condensing boilers.
3. Variable speed hot water pumps (duty/standby) and ancillary equipment including air/dirt separator, expansion tank and chemical feeder.
4. Packaged air-cooled chiller
5. Hot water Unit Heaters, Split-system blower coiler unit, 4-pipe fan coil units and 4-pipe blower coil units



Courthouse – Addition HVAC & Control Upgrades

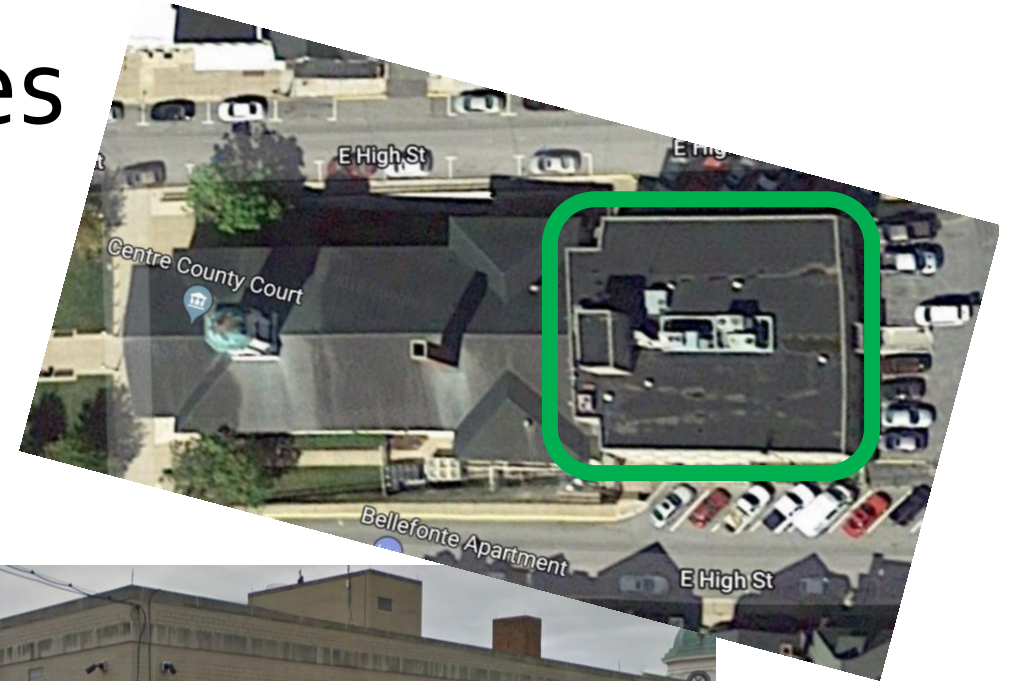
Four Pipe Fan Coil with VAV RTU's

Courthouse Addition (partial 2nd floor, 3rd floor, 4th floor)

1. Remove 4-ton cooling only
2. Remove 3-ton cooling only split-system
3. Remove associated ductwork and controls.
4. Remove the ductless split-systems, zone dampers and controls, existing rooftop units, the Dectron energy recovery unit and hot water piping.

New Work

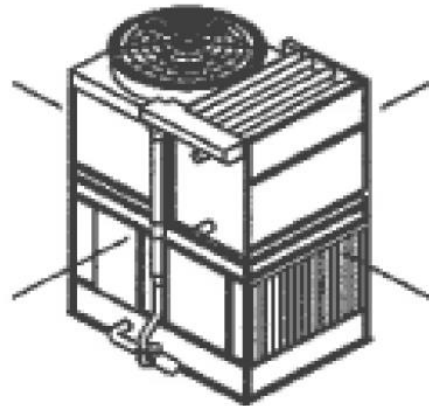
1. Install a packaged gas fired, DX energy recovery unit with VAV and full humidity control to provide ventilation air to the main Courtroom in the historic portion of the Courthouse.
2. Install (2) cooling only VAV packaged rooftop units.
3. Outdoor air shall be controlled by CO2 sensors in each zone. Each unit shall have air side economizer with powered exhaust.
4. New VAV duct system with shut-off type VAV boxes with hot water coil, supply duct and diffusers, return duct and grilles, combination DDC temperature/CO2 sensor.



Prison Fluid Cooler

The new system will:

- Be placed on roof, above the mechanical room.
- Tie into the existing loop on the return line from the well field upstream of the secondary loop connection.
- Include a normally closed bypass line.



Prison DWH System & Kitchen RTU Replacement

Domestic Water Heater System Replacement:

1. Four (4) high efficiency gas fired domestic water heaters will be installed as a one for one replacement
 - **Two 600 gallon** (reached the end of life expectancy)
 - **Two 400 gallon** (currently failing)
2. The automation system will provide monitoring of select operating points



Kitchen Roof Top Unit Replacement:

1. Roof Top Unit #1 will be replaced above the kitchen.
2. The new unit will provide 100% outside air operation.



Willowbank MUA Unit & Fluid Cooler Upgrades

Existing Conditions

- The existing 4120 CFM MUA unit located in the penthouse is split-system DX with a gas furnace.
- In the same penthouse is EF-4, 3030 CFM which is interlocked with the MUA unit.

Opportunity

- Two (2) systems will be replaced with an ERV.
- Two (2) existing fluid coolers will be replaced with one new fluid cooler; tonnage to meet capacity.



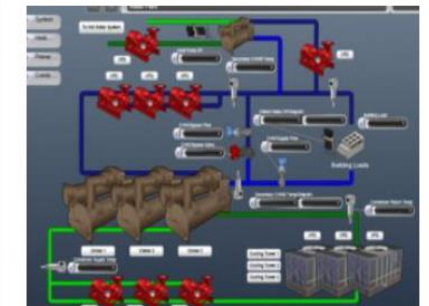
Willowbank Boilers and Controls Upgrade

Existing Conditions

- Current boilers (1989) are approaching their end of useful life.
- Control panel is obsolete; difficult to find parts

Opportunity

- Install new high efficiency condensing style natural gas boilers
- All new piping, pumps, expansion tanks, air/dirt separators
- Upgrade to controls for improved functionality



Sheriff's Office Heating & Control Upgrade

Existing Conditions

1. The building's gas fired atmospheric boiler that fed an under floor radiant heat system has failed; the system is abandoned.
2. Various County installed electric heat systems currently heat the building.
3. The boiler is in good shape and can be reused.

Opportunity

1. In response to a more efficient means to heat the building, a full perimeter hot water baseboard heating system is the most cost effective solution, minimizing the horizontal piping and floor penetrations.
2. Fin tube heating will be added and tied to existing boiler.
3. Zoning to be controlled by zone pumps.



Sheriff's Office Roofing

Roofing * (based on Tremco Manufacturing)

TPO (Thermoplastic Polyolefin): Mechanically fastened and fully adhered (**25 year warranty**)

- Remove existing roof down to existing decking and install new insulation
- Install dens deck in low rise foam adhesive and .060 TPO in bonding adhesive
- Install new Trem Lock EES gravel stop with extender metal on the outside edge



*** Includes: New wood blocking on outside edge, new coping, drip metal, gutter and downspouts, flash in all drains, pipes and curbs.**

Sheriff's Office Window Replacement

Windows Replacement

1. Replace 21 (Non-Security) storefront windows upstairs and in the stairwell.
2. Replace 5 (Non-Security) Storefront windows on first floor.
3. Replace (8) Security Windows



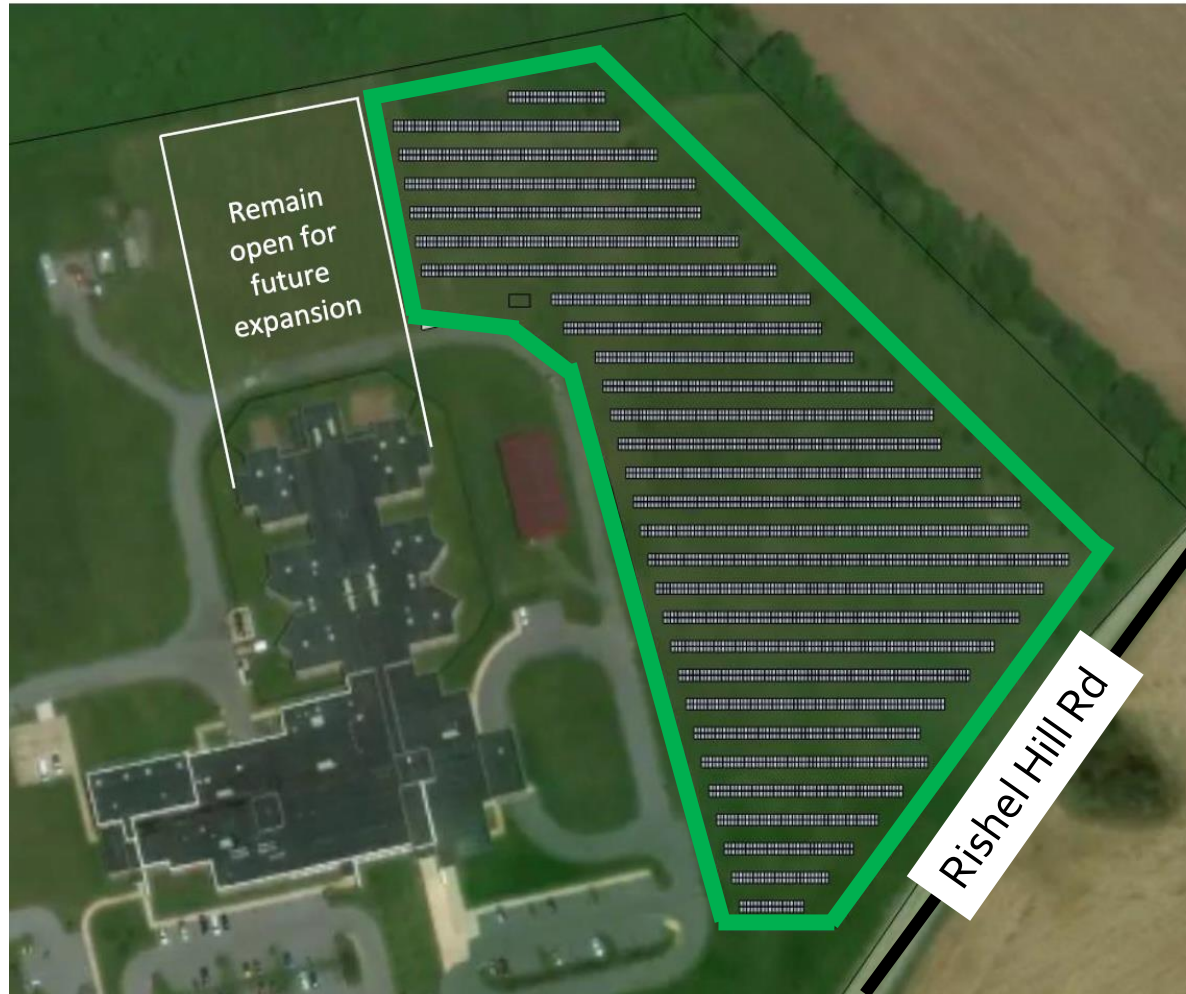
Sheriff's Office Interior Repairs

Interior Repair and Restoration

1. Protect furniture in rooms to be repaired.
2. Refurbish damaged plaster area.
3. Prime and paint walls/ceilings where repair work occurred.



Solar Project



Power Purchase Agreement

1. Investors provide capital (federal/state tax credits and incentives offset project costs) and own the solar array.
2. Solar Group operates (and maintains) the system and collects payments from Centre County for power generated.
3. Centre County purchases low cost solar electricity (***West Penn Power & Direct Energy***) at a predetermined rate and term.

Benefits: Reduced and fixed operating costs.

- ✓ Leverage fuel from the sun to power the Prison at a lower cost.
- ✓ Establishes a predictable energy cost over contracted term years.

System Size: 1,503 kW

4,356 Solar Modules (345 Watts Each)

Annual Production: Over 1.9M kWh

Benner Township Zoning Approved

GUARANTEED ENERGY SAVINGS PROGRAM

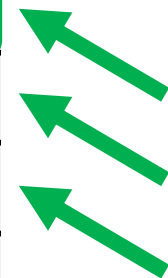
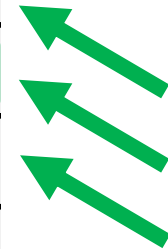
- Total Project Construction Cost
 - \$5,425,348
- Total 20 Year Energy and Operational Savings
 - \$5,653,476
- Total 20 Year Capital Avoided Outlays
 - \$5,500,000
- **TOTAL 20 YEAR SAVINGS**
 - **\$11,153,476**

Planning for the Future

- “In order to address capital intensive needs such as HVAC and Controls, a 20 year term project bundles more energy saving measures enabling the County to meet long range goals for necessary modernization, comfort and safety.”
- “Implementing a more comprehensive solution affords the County the solid preparedness in decreasing vulnerabilities for a far better long term position.”

GUARANTEED ENERGY SAVINGS PROGRAM

		Cost	Savings
1	LED Lighting Upgrades	\$510,900	\$1,599,948
2	County Wide Building Envelope	\$68,319	\$167,403
3	County Courthouse HVAC & Controls (4-Pipe)	\$2,233,090	\$132,993
4	Prison Fluid Cooler	\$220,585	\$0
5	Prison DWH & Kitchen RTU Replacement	\$417,456	\$3,109
6	WB MUA Unit & Fluid Cooler Upgrades	\$376,845	\$142,152
7	WB Boiler Plant and Controls Upgrade	\$468,801	\$39,768
8	Sheriff's Office Heating & Controls Upgrade	\$237,368	\$53,268
9	Sheriff's Office Roof (TPO) Replacement	\$184,946	\$2,312
10	Sheriff's Office Window Replacement	\$98,460	\$9,878
11	Sheriff's Office Interior Repairs	\$68,979	\$0
12b	Solar Project	\$539,599	\$3.1M - \$3.5M



Savings of
>\$10,000



GUARANTEED ENERGY SAVINGS PROGRAM

		Cost	Savings
1	LED Lighting Upgrades	\$510,900	\$1,599,948
2	County Wide Building Envelope	\$68,319	\$167,403
3	County Courthouse HVAC & Controls (4-Pipe)	\$2,233,090	\$132,993
4	Prison Fluid Cooler	\$220,585	\$0
5	Prison DWH & Kitchen RTU Replacement	\$417,456	\$3,109
6	WB MUA Unit & Fluid Cooler Upgrades	\$376,845	\$142,152
7	WB Boiler Plant and Controls Upgrade	\$468,801	\$39,768
8	Sheriff's Office Heating & Controls Upgrade	\$237,368	\$53,268
9	Sheriff's Office Roof (TPO) Replacement	\$184,946	\$2,312
10	Sheriff's Office Window Replacement	\$98,460	\$9,878
11	Sheriff's Office Interior Repairs	\$68,979	\$0
12b	Solar Project	\$539,599	\$3.1M - \$3.5M

Savings of
 <\$10,000

Directions for Staff

- Inform McClure of County's interest in pursuing all twelve of the items listed on the Investment Grade Audit including Solar Project w/ 7 year Buyout and DCED Solar Energy Program Grant via CFA
- County Solicitor: Review contract between County and McClure
- Commissioners' Office: Update Project Budget
 - Plan A: \$1M for projects <\$10k savings; 10 year bond for projects >\$10k savings; w/ solar grant
 - Plan B: \$1M for projects <\$10k savings; 10 year bond for projects >\$10k savings; w/o solar grant
- Planning & Community Development Office: Solar Presentation
 - Power Purchase Agreement

Going Forward

- Tuesday, March 13, 2018 – BOC Public Meeting
– Discussion and Direction to Staff
- Tuesday, March 27, 2018 – BOC Public Meeting
– Presentation from Staff, Discussion, and Feedback
- Tuesday, April 4, 2018 – BOC Public Meeting
– Final Presentation from Staff, Discussion, and Feedback
- Mid/Late April 2018 – BOC Public Meeting
– Approve Contract with McClure
- May 2018 – BOC Public Meeting – Bond Closing
- June/July 2018 – Commence with Construction